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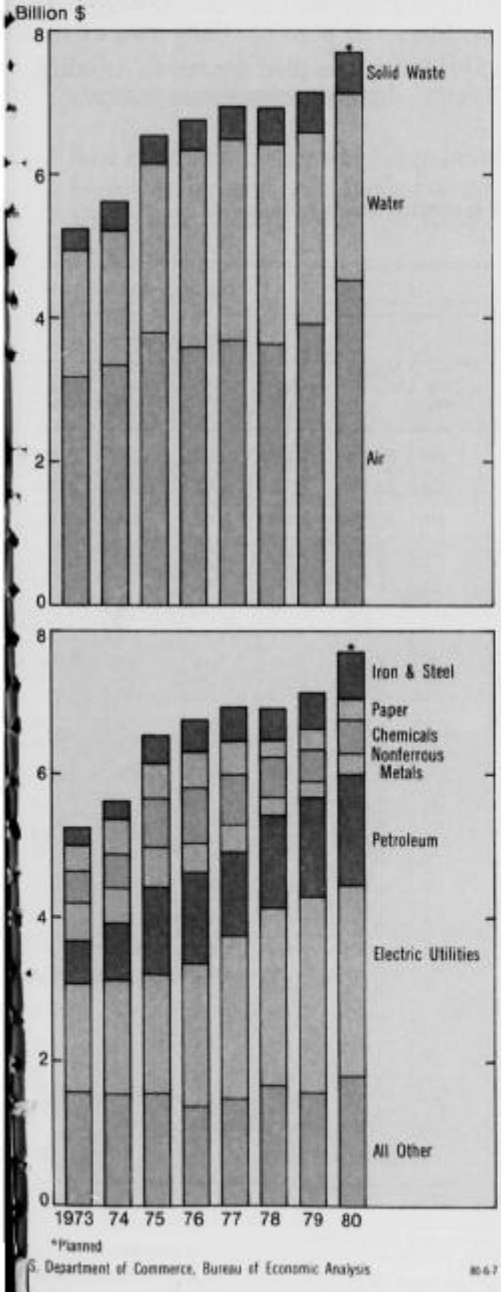
Capital Expenditures by Business for Pollution Abatement, 1978, 1979, and Planned 1980

CHART 7

New Plant and Equipment Expenditures for Air, Water, Solid Waste Pollution Abatement



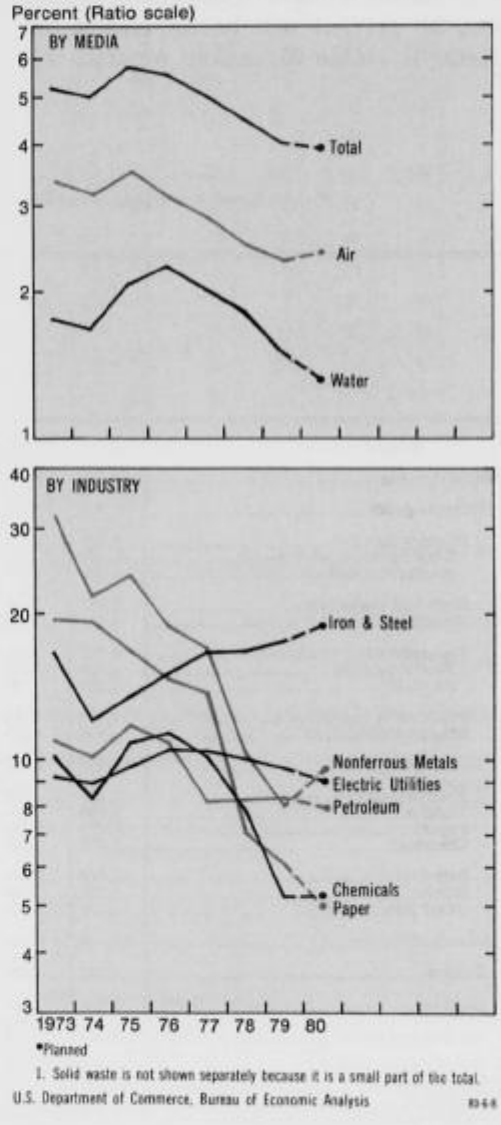
THIS article presents expenditures for new plant and equipment to abate air and water pollution and to dispose of solid waste as reported by nonfarm business in a survey conducted by BEA in late November and December 1979. It also presents estimates by BEA of prices and real spending for new plant and equipment for pollution abatement (PA). Highlights are:

- Business plans an 8-percent increase in PA capital spending for 1980. If prices increase in 1980 at the same rate as in 1979, these plans indicate a decrease in real spending in 1980. Prices for PA capital, as estimated by BEA, increased 10 percent in 1979.
- The $0.6 billion increase that business plans for 1980 is entirely for air PA capital. These plans probably reflect the approach of a major air PA deadline in 1982.
- PA capital spending increased 3 percent in 1979. Real spending, as estimated by BEA, decreased 6 percent.

The universe estimates discussed here are based on sample data from companies and not from separate reports for plants or establishments. A company's spending is assigned to a single industry based on the industry classification of the company's principal products. The universe estimates do not cover spending by agricultural business; real estate; medical, legal, educational, and cultural services; and nonprofit organizations. Costs of operating PA capital are also excluded.

CHART 8

Air, Water, and Solid Waste Pollution Abatement as a Percent of Total New Plant and Equipment Expenditures[1]



Capital expenditures and operating costs for pollution abatement and control by business, government, and consumers are presented by BEA each February in the SURVEY OF CURRENT BUSINESS.

Survey results

Business plans to spend $7.7 billion in 1980 for PA capital, compared with $7.1 billion spent in 1979 (table 1 and chart 7). Plans indicate that 59 percent of spending will be for air PA capital, 34 percent for water, and 7 percent for solid waste. In 1979, the shares were 55 percent, 37 percent, and 8 percent.

Of air and water PA capital spending, 81 percent will be for end-of-line methods (table 2) and 19 percent will be for changes-in-production-process methods. In 1979, the shares were 80 percent and 20 percent. End-of-line methods involve the separation, treatment, or reuse of pollutants after they are generated but before they are emitted from the firm's property. Changes-in-production-process methods involve the modification of existing production processes or the substitution of new processes to reduce or eliminate the pollutants generated.[1]

The proportion of new plant and equipment spending allocated to PA will decrease to 3.9 percent in 1980 from 4.0 percent in 1979. As shown in chart 8, this proportion decreased every year since 1976.

Manufacturing industries plan to increase PA capital spending 14 percent in 1980 and nonmanufacturing industries plan to spend the same amount as in 1979. Of the major industries (those spending $100 million or more for PA capital), the largest planned increases are: motor vehicles, 39 percent; nonferrous metals, 34 percent; "communication, commercial, and other," 27 percent; iron and steel, 25 percent; stone-clay-glass, 21 percent; and "other durables," 20 percent. Only two of the major industries plan decreases: mining,

1. Changes-in-production-process expenditures are the result of an attempt to identify the PA part of capital expenditures made jointly for conventional production and abatement. Identifying the PA part of joint expenditures is difficult for respondents and therefore care should be exercised when using these data.

Table 1.—New Plant and Equipment Expenditures by U.S. Business: Total and for Pollution Abatement [1]

[Millions of dollars]

	1978					1979					Planned 1980				
	Total [2]	Pollution abatement				Total [2]	Pollution abatement				Total [2]	Pollution abatement			
		Total	Air	Water	Solid waste		Total	Air	Water	Solid waste		Total	Air	Water	Solid waste
All industries	152,090	6,824	3,542	2,781	502	178,371	7,137	3,915	2,044	584	195,473	7,699	4,530	2,404	544
Manufacturing	57,646	3,951	1,992	1,652	306	74,390	3,976	2,103	1,492	381	89,510	4,540	2,515	1,642	383
Durable goods	21,749	1,561	901	566	94	37,990	1,585	936	540	109	43,769	1,956	1,192	628	137
Primary metals [3]	5,971	752	530	205	17	6,541	811	558	227	20	7,621	1,010	688	280	32
Blast furnaces, steel works	2,022	441	200	140	10	2,896	519	351	164	5	3,380	628	485	197	6
Nonferrous metals	2,387	247	189	53	5	2,693	213	142	50	13	2,986	285	187	75	23
Electrical machinery	3,637	130	20	88	10	5,035	114	27	82	0	6,054	126	46	73	7
Machinery, except electrical	6,436	111	67	40	9	8,147	85	36	30	13	9,617	97	45	44	8
Transportation equipment [3]	8,271	224	93	98	33	7,796	261	122	97	42	8,789	350	181	110	60
Motor vehicles	6,655	198	82	87	28	5,377	223	100	83	34	5,767	311	108	100	43
Aircraft [4]	1,306	23	9	10	6	2,136	33	13	13	6	2,754	36	11	16	7
Stone, clay, and glass	2,464	164	108	47	7	2,676	145	116	22	7	3,294	176	130	33	13
Other durables [5]	6,670	161	87	62	12	7,475	166	78	72	16	8,485	199	101	70	28
Nondurable goods	35,897	2,389	1,092	1,086	211	41,411	2,391	1,167	953	272	45,741	2,683	1,323	1,014	246
Food including beverage	4,820	172	75	76	22	5,085	148	51	84	13	5,416	150	51	83	16
Textiles	1,022	29	12	8	8	1,431	31	21	10	1	1,162	30	23	12	1
Paper	3,371	239	105	103	31	4,835	207	133	124	49	5,059	300	135	125	40
Chemicals	7,206	565	236	280	42	8,407	490	203	184	53	9,084	476	218	205	53
Petroleum	16,600	1,244	611	580	98	16,473	1,385	708	530	147	19,068	1,630	844	545	127
Rubber	1,761	58	40	12	7	1,858	62	38	12	12	2,029	58	39	14	0
Other nondurables [6]	2,108	32	11	17	4	2,722	20	13	5	4	3,024	27	13	10	5
Nonmanufacturing	94,444	2,974	1,649	1,128	197	[illegible]	3,765	1,812	1,171	183	106,163	3,160	2,016	962	183
Mining	4,844	206	107	88	11	5,525	187	60	105	23	6,451	171	63	71	37
Railroad	3,224	30	6	20	2	3,885	20	2	17	1	4,305	32	9	22	1
Air transportation	2,362	15	13	2	(*)	3,225	12	7	5	1	3,442	18	11	2	1
Other transportation	2,389	25	7	14	4	2,074	24	11	11	2	3,408	40	20	15	5
Public utilities	29,165	2,509	1,443	908	160	33,184	2,703	1,653	975	135	34,304	2,702	1,817	781	104
Electric	24,500	2,472	1,431	887	154	28,191	2,715	1,638	950	129	29,220	2,658	1,795	761	102
Gas and other	4,575	35	12	21	2	4,903	48	18	25	6	5,168	44	23	20	2
Communication, commercial, and other [7]	43,401	165	73	69	22	40,107	160	70	69	22	44,073	208	96	70	38

*Less than $500,000.
1. Excludes agricultural business; real estate; medical, legal, educational, and cultural services; and nonprofit organizations. Pollution abatement operating costs are also excluded.
2. Estimates of total new plant and equipment expenditures are based on the same surveys as the estimates of pollution abatement expenditures: for 1978, on the survey conducted in November and December 1978, for 1979 and planned 1980, on the survey conducted in November and December 1979.
3. Includes industries not shown separately.
4. Includes guided missiles and space vehicles.
5. Consists of fabricated metal, lumber, furniture, instruments, and miscellaneous.
6. Consists of apparel, tobacco, leather, and printing-publishing.
7. Consists of communication, trade, service, construction, finance, and insurance.

NOTE.—Estimates for 1973-77 can be found in "Capital Expenditures by Business for Pollution Abatement, 1973-77 and Planned 1978," SURVEY OF CURRENT BUSINESS, June 1978, pp. 33-38.

9 percent; and electric utilities, 2 percent.

Industries that spent the most for PA capital during the period 1973–79 are also those that have allocated the largest share of new plant and equipment spending to PA (charts 7 and 8). These industries—electric utilities, petroleum, chemicals, paper, nonferrous metals, and iron and steel—have accounted for approximately three-fourths of all PA capital expenditures since 1973. In 1980, electric utilities plans to spend the most for PA capital ($2.7 billion); iron and steel plans to allocate the largest share of total capital spending to PA (19 percent).

CHART 9

New Plant and Equipment Expenditures for Air, Water, and Solid Waste Pollution Abatement: Change From Preceding Year

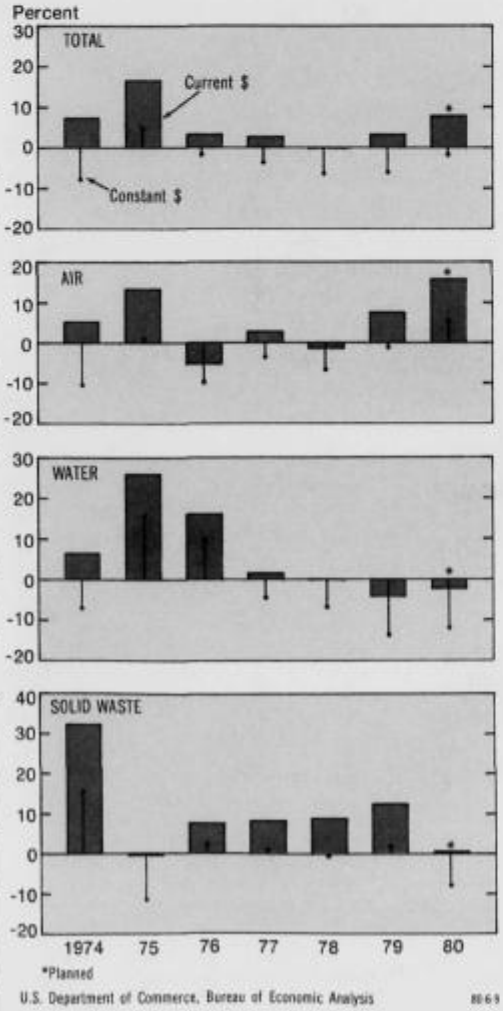


Table 2.—New Plant and Equipment Expenditures by U.S. Business for Air and Water Pollution Abatement by End-of-Line Methods [1]

[Millions of dollars]

	1978			1979			Planned 1980		
	Total	Air	Water	Total	Air	Water	Total	Air	Water
All industries	**5,047**	**2,755**	**2,292**	**5,262**	**3,127**	**2,135**	**5,810**	**3,758**	**2,052**
Manufacturing	**2,925**	**1,541**	**1,384**	**2,909**	**1,697**	**1,212**	**3,327**	**2,010**	**1,318**
Durable goods	**1,200**	**728**	**472**	**1,197**	**760**	**436**	**1,453**	**946**	**507**
Primary metals [2]	605	436	169	698	492	206	880	598	282
Blast furnaces, steel works	353	227	125	480	329	151	612	418	194
Nonferrous metals	200	167	32	153	112	41	178	127	51
Electrical machinery	100	21	79	89	18	71	97	36	62
Machinery, except electrical	89	48	41	66	30	37	75	34	41
Transportation equipment [2]	118	48	71	113	58	55	163	95	68
Motor vehicles	102	40	61	93	50	44	142	87	55
Aircraft [3]	14	6	8	18	8	10	19	8	11
Stone, clay, and glass	146	100	46	116	97	19	129	100	29
Other durables [4]	141	75	66	115	66	49	128	83	45
Nondurable goods	**1,725**	**813**	**912**	**1,712**	**937**	**776**	**1,874**	**1,064**	**810**
Food including beverage	97	39	58	79	28	51	85	28	57
Textiles	11	5	6	17	8	9	19	8	11
Paper	184	99	84	220	112	107	194	93	100
Chemicals	434	187	247	334	174	160	345	172	172
Petroleum	929	436	492	1,003	573	430	1,169	721	449
Rubber	48	37	11	47	38	10	47	34	13
Other nondurables [5]	23	9	14	13	5	8	16	8	8
Nonmanufacturing	**2,122**	**1,214**	**908**	**2,353**	**1,430**	**923**	**2,483**	**1,748**	**735**
Mining	156	76	80	130	37	93	108	46	62
Railroad	30	4	26	19	2	17	31	9	22
Air transportation	14	12	2	10	6	4	12	11	2
Other transportation	11	4	7	15	7	8	21	12	9
Public utilities	1,794	1,072	722	2,082	1,327	755	2,190	1,599	591
Electric	1,778	1,063	715	2,054	1,315	739	2,162	1,584	578
Gas and other	16	9	7	29	13	16	28	15	12
Communication, commercial, and other [6]	117	46	72	97	51	46	122	72	50

1. Changes-in-production-process estimates can be derived by subtracting estimates in this table from those in table 1.
2. Includes industries not shown separately.
3. Includes guided missiles and space vehicles.
4. Consists of fabricated metal, lumber, furniture, instruments, and miscellaneous.
5. Consists of apparel, tobacco, leather, and printing-publishing.
6. Consists of communication, trade, service, construction, finance, and insurance.

NOTE.—End-of-line expenditures for 1973–77 can be derived from the June 1978 SURVEY article (cited earlier) by subtracting changes-in-production-process expenditures (table 2) from total PA capital expenditures (table 1).

Table 3.—New Plant and Equipment Expenditures for Air, Water, and Solid Waste Pollution Abatement in Current and Constant Dollars with Implicit Price Deflators

	1973	1974	1975	1976	1977	1978	1979	Planned 1980
	Millions of dollars							
Total	**5,238**	**5,617**	**6,549**	**6,762**	**6,939**	**6,924**	**7,143**	**7,699**
Air	3,176	3,343	3,790	3,693	3,593	3,642	3,915	4,530
Water	1,762	1,876	2,362	2,743	2,785	2,781	2,664	2,604
Solid waste	301	398	396	462	426	502	564	566
	Millions of constant (1972) dollars							
Total	**5,003**	**4,603**	**4,844**	**4,754**	**4,568**	**4,264**	**[1] 3,991**	**[1] 3,915**
Air	3,060	2,736	2,769	2,493	2,307	2,226	2,194	2,327
Water	1,656	1,535	1,781	1,960	1,868	1,736	1,491	1,306
Solid waste	287	333	294	302	303	302	309	283
	Implicit price deflator							
Total	**104.7**	**122.0**	**135.2**	**142.2**	**151.9**	**162.4**	**[1] 178.9**	**[1] 196.6**
Air	103.8	122.2	136.9	144.1	154.1	163.6	178.5	194.7
Water	106.4	122.2	132.6	140.0	149.1	160.1	178.7	199.4
Solid waste	104.7	119.7	135.0	141.2	152.0	166.4	182.4	199.9

1. The implicit price deflators for 1979 are based on preliminary source data.
2. Price changes for 1980 are assumed to be the same as in 1979.

Price change and real spending

Prices for PA capital goods, as measured by the implicit price deflator shown in table 3, increased 10 percent in 1979. Prices increased 9 percent for air PA capital goods, 12 percent for water, and 10 percent for solid waste. The implicit price deflators are based on components of *Chemical Engineering's* Plant Cost Index; Environmental Protection Agency's Large City Advanced (Wastewater) Treatment Cost Index; Whitman, Requardt and Associates' Cost Index; Bureau of Labor Statistics' Producer Price Index; and indexes prepared by BEA. The selection of indexes and the weights assigned differ for air, water, and solid waste.

After adjustment for price change, spending for PA capital goods decreased 6 percent in 1979 (chart 9). Real spending for air PA decreased 1 percent, water decreased 14 percent, and solid waste increased 2 percent.

Plans for 1980 indicate a decrease of 2 percent in real spending for PA capital if prices increase at the same rate as in 1979. The decrease may exceed 2 percent if planned spending exceeds actual spending. In 5 of the 6 years for which data are available, planned spending in current dollars was more than actual spending.

Real spending for air PA capital is indicated to increase 6 percent in 1980, largely offsetting decreases expected for water and solid waste. It is likely that 1980 plans reflect the 1982 deadline for reducing concentrations of particulate matter, sulfur dioxide, and nitrogen dioxide in air to levels that do not endanger public health. The next major deadline for water PA is set for 1984, when "best available technology economically achievable" will be required for toxic pollutants and "best conventional pollutant control technology" will be required for conventional pollutants (e.g., suspended solids). The solid waste regulations that are expected to be the most costly for business are those for hazardous wastes (e.g., toxic wastes). The final technical standards governing the treatment, storage, and disposal of these wastes are scheduled for release this fall.